

## CLINICAL OUTCOMES OF CATARACT SURGERY WITH IMPLANTATION OF A CONTINUOUS TRANSITIONAL FOCUS INTRAOCULAR LENS

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## Disclosure

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## Abstract

*Purpose:* To evaluate the clinical outcomes obtained after cataract or crystalline lens surgery with implantation of a new continuous transitional focus (CTF) intraocular lens (IOL).

*Setting:* San Rafael Hospital, Madrid, Spain

*Design:* Non-randomized prospective case series

*Methods:* Sixty-two eyes of 31 patients (mean age: 61.3 years) were enrolled. In all cases, uncomplicated phacoemulsification cataract surgery was performed with bilateral implantation of the CTF IOL Precizon Presbyopic (Ophtec BV, Groningen, The Netherlands). Visual, refractive, and contrast sensitivity outcomes were evaluated during a 6-month follow-up. Likewise, the incidence of postoperative disturbing photic phenomena was recorded.

*Results:* Mean 6-month postoperative binocular uncorrected distance (UDVA), intermediate (UIVA) and near visual acuity (UNVA) were  $0.01 \pm 0.03$ ,  $0.17 \pm 0.04$ , and  $0.02 \pm 0.04$  logMAR, respectively. A total of 98.4% and 93.5% of eyes achieved 20/25 monocular UDVA and UNVA or better, respectively, whereas all eyes (100%) achieved 20/30 UIVA or better. Mean corrected visual acuity of  $0.14 \pm 0.05$ ,  $0.15 \pm 0.06$ , and  $0.19 \pm 0.02$  logMAR were obtained for the defocus levels of -1, -1.5 and -2 D. Mean 6-

month postoperative log contrast sensitivity was  $1.22 \pm 0.18$  and  $0.75 \pm 0.10$  for 12 and 18 cycles/°. A total of 9.7% and 6.5% of patients reported disturbing halos and glare.

*Conclusions:* This presbyopia-correcting IOL provides a complete visual rehabilitation after cataract surgery, maintaining excellent levels of visual quality. Specifically, the IOL generates a continuous range of functional vision from distance to near, with minimal levels of photic phenomena associated.

*Keywords:* presbyopia; cataract surgery; Precizon presbyopic; continuous transitional focus intraocular lens; extended depth of focus; defocus curve.

## Introduction

Multifocal intraocular lens (IOL) implantation after cataract surgery has shown to be an effective therapeutic option to achieve postoperative spectacle-independence and functional vision.<sup>1</sup> Despite the technological advances in IOL technology, some limitations and disadvantages have been also described for different models of multifocality.<sup>1</sup> One of the main disadvantages of multifocal IOLs is the induction of disturbing photic phenomena mainly due to the significant difference between in-focus and out-focus images projected on the retina.<sup>2,3</sup> Indeed, this is one of the main causes of dissatisfaction after cataract surgery with multifocal IOL implantation.<sup>4</sup> Extended depth of focus (EDOF) IOLs were developed to overcome this limitation by inducing a continuous range of focus, but with a not completely functional near vision compared to multifocal IOLs.<sup>5</sup> Furthermore, with multifocal IOL implants, centration is a critical factor limiting the outcomes as a decentered multifocal IOL may induce significant levels of high-order aberrations and scattering leading to a degradation of the

postoperative visual function. Likewise, some multifocal IOL designs have been shown to be pupil-dependent, with a significant variability in the outcomes depending on pupillary changes.<sup>6,7</sup> A new concept of presbyopia-correcting intraocular lens (IOL) has been recently developed, the concept of continuous transitional focus (CTF), with the aim of overcoming some limitations and problems of the predecessor multifocal and EDOF IOLs.<sup>8</sup>

CTF IOLs are based on obtaining a smoother transition between distance and near vision by combining different sectors in the optical zone of the IOL providing the distance and near vision correction.<sup>8</sup> The first IOL developed and commercially released based on this CTF concept is the Precizon Presbyopic 570 A0 IOL (Ophtec BV, Groningen, The Netherlands) (Figure 1). Specifically, this IOL is divided into three concentric sectors, including a central factor of higher diameter that provides the distance correction, and two peripheral sectors presenting a bimodal distribution of distance and near correction, changing along four segments in each sector.<sup>8</sup> The aim of the current study is to report for the first time the clinical outcomes in terms of visual acuity, contrast sensitivity and photic phenomena obtained after conventional cataract surgery with implantation of this new CTF IOL.

## **Methods**

### *Patients*

This study was a non-randomized prospective case series including 62 eyes of 31 patients with a mean age of 61.3 years. In all cases, uncomplicated phacoemulsification surgery was performed with bilateral implantation of the CTF IOL Precizon Presbyopic (Ophtec BV, Groningen, The Netherlands). All patients were adequately informed about the study and signed a consent form prior to their inclusion.

The study adhered to the tenets of the Declaration of Helsinki and was approved by the hospital ethics committee. Inclusion criteria were patients with cataract or presbyopic/pre-presbyopic patients suitable for refractive lens exchange seeking for spectacle independence, and pre-existing corneal astigmatism below 1 D. Exclusion criteria included active or systemic ocular pathology, previous ocular surgery, antecedents of glaucoma, uveitis or retinal problems, irregular corneal astigmatism, and abnormal iris.

#### *Preoperative and postoperative examinations*

A complete preoperative ophthalmological examination was performed in all patients including measurement of monocular uncorrected (UDVA) and binocular corrected distance visual acuity (CDVA), manifest refraction, measurement of uncorrected near visual acuity (UNVA) at 40 cm, keratometry, Goldmann applanation tonometry, slit lamp examination, optical biometry (IOL Master v.4.3, Carl Zeiss Meditec, Jena, Germany), and indirect ophthalmoscopy.

Postoperatively, patients were evaluated the day after surgery, as well as at 1 and 6 months after surgery. UDVA measurement, tonometry and examination of the integrity of the anterior segment was performed the day after surgery. At 1 and 6 months postoperatively, the following tests were performed: measurement of monocular and binocular UDVA, binocular CDVA, monocular and binocular UNVA at 40 cm, and monocular and binocular uncorrected intermediate visual acuity (UIVA) at 66 cm, evaluation of defocus curve to evaluate the range of functional function (defocus introduced in 0.5-D steps from +1.50 D to -5.00 D), and contrast sensitivity measurements under dim ambient light conditions (approx. 25 lux) (Advanced Ophthalmic Charts, AOC, EYENEXT, Camburzano, Italy; test illumination 300 lux).

Distance visual acuity and defocus curve measurements were performed at 2.45 m due to the spatial limitations of the examination room, with an adjustment of the optotype size according to this distance. These measurements were performed under dim ambient light conditions (approx. 25 lux), taking care that no reflections or light sources were dazzling the patient (Advanced Ophthalmic Charts, AOC, EYENEXT, Camburzano, Italy; test illumination 300 lux). Likewise, patients were asked orally if they perceived disturbing photic phenomena, including halos, glare and starbursts.

### *Surgery*

All surgeries were performed by the same experienced surgeon (MR) using a standard technique of sutureless microincision phacoemulsification. Surgeries were initiated after instilling anaesthesia and mydriatic drops by performing a corneal incision at the temporal area. The procedure was followed with the creation of the capsulorhexis and the performance of the phacoemulsification. After this, the IOL was inserted into the capsular bag through the main incision using the injector developed by the manufacturer for this purpose. A capsular tension ring (CTR) was inserted in all cases before IOL, with a diameter of 12 mm for white-to-white (WTW) corneal diameters until 11.9 mm and with a diameter of 13 mm for eyes with WTW of 12 mm or more. A postoperative topical therapy based on a combination of topical antibiotic and steroid was prescribed to be applied four times daily for one week.

### *Intraocular lens*

The 570 A0 Precizon Presbyopic IOL is a one-piece CTF IOL with a 6.0-mm optic, an overall length of 12.5 mm (Figure 1). It has open modified C-loops with offset shaped haptics. It is made of a hybrid material hydrophilic/hydrophobic acrylic material with ultraviolet filtering HEMA/EOEMA copolymer, with a refractive index of 1.46.

This IOL provides the ability for a transition in focus between 11 distinct segments (five for distance and six for near vision), with the central segment dedicated for distance vision ( $x=2.0$  mm,  $y=0.5$  mm). The rotated segments have a width of 0.75 mm. The IOL is available in optic powers from 1.0 to 35.0 D (0.5-D increments), with a near addition of +2.75 D. The company labelled A-constant for this IOL is 118.6. In the current study, IOL power calculations were performed using the SRK-T formula considering the measurements of corneal power, axial length, and anterior chamber depth obtained with the optical biometer. Target refraction was emmetropia in all cases.

#### *Statistical analysis*

Statistical analyses were performed with a commercially available software package (SPSS for Mac, Version 20.0; IBM Corporation, Armonk, NY, USA). Normality of data samples was evaluated by means of the Kolmogorov-Smirnov test. When parametric analysis was possible, the Student t test for paired data was used for comparisons between consecutive visits, whereas the Wilcoxon ranked sum test was applied to assess the significance of such differences when parametric analysis was not possible. For all statistical tests, a p-value below 0.05 was considered as statistically significant.

### **RESULTS**

A total of 62 eyes of 31 patients with mean age of 61.3 years (SD: 8.2, median: 61.0, range: 48 to 83 years) were enrolled. The sample was comprised of 7 males (22.6%) and 24 females (77.4%). A calculation of the statistical power associated to the sample size of 62 eyes of this study have been performed using the online calculator

GRANMO (<http://www.imim.cat/ofertadeserveis/software-public/granmo>), obtaining a value of 80% considering a paired comparison pre-post, UNVA as the main outcome measure, the standard deviation of differences in UNVA (preop-1 month postop, 0.33 logMAR), an alpha error of 0.05 and a minimum detectable difference of 0.12 logMAR. According to this, the statistical power is enough to detect the presence of differences in UNVA with surgery that can be clinically relevant.

#### *Visual and refractive outcomes*

Table 1 summarizes the preoperative and postoperative visual and refractive data obtained in the whole sample. As shown, a significant improvement was observed in monocular UDVA and UNVA as well as in binocular CDVA ( $p < 0.001$ ), with no significant changes afterwards ( $p \geq 0.157$ ). At 1 and 6 months after surgery, a total of 98.4% (61/62) and 93.5% (58/62) of eyes had a value of UDVA and UNVA of 20/25 or better, respectively (Figure 2). Likewise, a total of 93.5% (56/62) of eyes achieved a value of 20/30 or better of UIVA at 1 and 6 months after surgery (Figure 2). Binocularly, at 6 months postoperatively, a total of 100% (31/31) and 96.8% (30/31) of eyes achieved a value of UDVA and UNVA of 20/25 or better, respectively, whereas all eyes (31/31, 100%) achieved 20/30 UIVA or better (Figure 3).

#### *Binocular defocus curve outcomes*

Figure 3 shows the mean 1-month and 6-month postoperative binocular defocus curve in the sample evaluated. No statistically significant changes were found in the visual acuities measured for the different levels of defocus tested between the first and sixth postoperative month ( $p \geq 0.059$ ), except for those corresponding to the defocus of -3.5 D ( $p = 0.005$ ) and -4 D ( $p = 0.046$ ) (Figure 4).



### *Contrast sensitivity outcomes*

Figure 5 shows the mean 1-month and 6-month postoperative binocular contrast sensitivity function in the sample evaluated. No significant changes in contrast sensitivity for any of the spatial frequencies evaluated were found between the first and the sixth postoperative month ( $p \geq 0.317$ ).

### *Photic phenomena*

At 1 and 6 months postoperatively, a total of 3 patients (9.7%, 3/31) reported the perception of disturbing halos. In contrast, the perception of disturbing glare was only reported by 2 patients at the two postoperative visits (6.5%, 2/31). The perception of starbursts was not reported by any patient evaluated during the follow-up.

## **DISCUSSION**

In the current study, the CTF IOL evaluated has shown to provide excellent distance visual outcomes, with values of 6-month postoperative UDVA and CDVA comparable to those reported for monofocal and EDOF IOLs.<sup>5,9-14</sup> Specifically, mean binocular logMAR UDVA and CDVA values of  $0.01 \pm 0.03$  and  $0.01 \pm 0.02$ , respectively, were obtained in our series. These distance visual outcomes are also similar and even better than those reported with other types of multifocal IOLs.<sup>9-13,15-19</sup> Levinger et al<sup>15</sup> evaluated 26 eyes undergoing femtosecond laser-assisted cataract surgery (FLACS) with implantation of a trifocal diffractive IOL, obtaining a mean 6-month postoperative UDVA of  $0.18 \pm 0.32$  logMAR. Mojzis et al<sup>19</sup> obtained in a comparative study of eyes undergoing cataract surgery with implantation of a bifocal or trifocal diffractive IOL based on the same platform, mean 12-month UDVA values of

$0.01 \pm 0.13$  and  $0.02 \pm 0.14$  logMAR, respectively. Concerning visual quality, excellent distant contrast sensitivity outcomes were observed with the CTF IOL analyzed. Specifically, the values of dim light contrast sensitivity obtained were closer to those reported for monofocal and EDOF IOLs when compared to multifocal IOLs.<sup>12-14,19</sup> Future studies should be conducted if this trend is also observed for contrast sensitivity measured at near.

Concerning intermediate visual outcomes, the CTF IOL evaluated showed monocular and binocular UIVA values of  $0.19 \pm 0.06$  and  $0.17 \pm 0.04$  logMAR, respectively. This outcome is consistent with that reported for intermediate vision with trifocal diffractive and low-addition bifocal diffractive IOLs.<sup>12-15,18,19</sup> Levinger et al<sup>15</sup> and Mojzis et al<sup>19</sup> found mean UIVA values of  $0.17 \pm 0.21$  and  $0.09 \pm 0.11$  logMAR at 66 cm with two different types of trifocal diffractive IOL. Savini et al<sup>14</sup> found mean DCIVA values of  $0.08 \pm 0.09$  and  $0.21 \pm 0.12$  logMAR in eyes implanted with a refractive EDOF and low-add multifocal IOLs, respectively. Likewise, intermediate visual outcomes obtained with the IOL evaluated were clearly superior to those reported for medium/high add bifocal diffractive IOLs.<sup>9,12,18,19</sup> Indeed, Mojzis and colleagues<sup>19</sup> demonstrated that a bifocal diffractive IOL provided significantly worse UIVA results than a trifocal diffractive IOL based on the same platform ( $0.26 \pm 0.17$  vs.  $0.09 \pm 0.11$  logMAR,  $p < 0.001$ ). In our sample, a total of 90.3% of eyes achieved a 6-month postoperative UIVA of 20/30 or better, which is consistent with the results of previous series evaluating EDOF or trifocal diffractive IOLs.<sup>10,12</sup> Cochener et al<sup>10</sup> found in a sample of eyes implanted with a diffractive-based EDOF that 55% of eyes achieved a UIVA value of 20/30 or better at 6 months after surgery. Pedrotti et al<sup>12</sup> found a percentage of eyes implanted with the same diffractive-based EDOF and achieving a postoperative UIVA of 20/25 or better of 83.64%. In this same comparative study, the

authors found that 94.0% and 6.0% of eyes implanted with a low and medium add multifocal IOL based on the same platform achieved postoperative UNVA of 20/25 or better.<sup>12</sup>

The near visual outcomes obtained with the CTF evaluated were clearly superior to those reported with monofocal and EDOF IOLs,<sup>9-13</sup> confirming the ability of this IOL of providing a functional and comfortable near vision. This may be considered as the main advantage of CTF IOLs over EDOF IOLs, although randomized comparative studies should be conducted to extract more consistent conclusions regarding this issue. Specifically, mean monocular and binocular UNVA values of  $0.04 \pm 0.05$  and  $0.02 \pm 0.04$  logMAR were obtained in our series, respectively. Savini et al<sup>14</sup> found DCNVA values of  $0.35 \pm 0.14$  and  $0.35 \pm 0.13$  logRAD in two groups of eyes implanted with a refractive-based EDOF and a low add diffractive IOL, respectively. Likewise, Pedrotti et al<sup>12</sup> found mean DCNVA values of  $0.18 \pm 0.09$  and  $0.32 \pm 0.10$  logMAR in eyes implanted with a diffractive-based EDOF and a low-add multifocal IOL, respectively. Therefore, the CTF IOL evaluated provides clearly better near visual outcomes than EDOF IOLs, with UNVA and DCNVA values at 40 cm comparable to those obtained with trifocal diffractive IOLs.<sup>10-13,15</sup> In our sample, a total of 93.5% of eyes achieved 6-month postoperative monocular UNVA of 20/25 or better. Cochener and coauthors<sup>10</sup> reported in a comparative study that a total of 81.5%, 82.5% and 52.5% achieved a 6-month postoperative UNVA of 20/30 or better with two different trifocal diffractive and a diffractive-based IOLs.

The good distance, intermediate and near visual outcomes obtained with the CTF IOL evaluated were consistent with the defocus curve measured in the patients enrolled in the current study. The mean defocus curve showed a continuous range of functional vision from 0 to 3 D of defocus, with corrected visual acuities better than

20/30. This visual behavior overcomes the limitation in near vision found and reported for EDOF and low add multifocal IOLs.<sup>12,16</sup> Likewise, the CTF IOL evaluated avoids a marked decay in visual performance in the intermediate range that can be observed with bifocal diffractive IOLs and even with some models of trifocal IOLs.<sup>12,18,19</sup> Mean corrected visual acuities values for the defocus level of 1 D of  $0.17 \pm 0.09$ ,  $0.03 \pm 0.06$ ,  $0.14 \pm 0.13$  and  $0.35 \pm 0.11$  logMAR for a monofocal, diffractive-based EDOF, low add diffractive and medium add multifocal IOLs, respectively. In our series, the mean corrected visual acuity for 1 D of defocus was  $0.14 \pm 0.05$  logMAR.

The perception of photic phenomena with the CTF IOL evaluated at the end of the follow-up was limited, with 9.7% and 6.5% of patients reporting disturbing halos and glare, respectively. This incidence of photic phenomena is similar to that reported with EDOF IOLs, developed by concept to reduce the size of halos and glare.<sup>10,14</sup> Sachdev et al<sup>20</sup> reported that 94% of patients implanted in a series of 50 patients implanted with a diffractive-based EDOF IOL perceived no or minimal photic phenomena such as glare and halos. Maxwell and coauthors<sup>21</sup> found in a comparative study that  $\geq 72\%$  and  $\geq 73\%$  of patients did not experience blurred, distorted, or double vision after implantation of a monofocal and a low add diffractive multifocal IOLs. Likewise, our incidence of photic phenomena was clearly inferior to that reported for different types of bifocal and trifocal IOLs.<sup>22-25</sup> Kretz et al<sup>24</sup> reported a percentage of perception of mild halos of 18.2% in eyes implanted with a bifocal diffractive IOL. Mendicute et al<sup>23</sup> confirmed that 25% of patients perceived bothering halos with a trifocal diffractive IOL. In this study, no clinical peculiarities were observed in the few cases referring the perception of photic phenomena. Possibly, differences in the mechanism of neuroadaptation between individuals may be the main factor contributing to this.

The use of CTR in the current series should be also considered as another factor potentially contributing to the successful outcome obtained. Various studies have demonstrated the benefit of using these devices when implanting presbyopia-correcting IOLs in terms of optimized intraocular optical performance due to a better IOL stability within the capsular bag.<sup>26-28</sup> Specifically, Mastropasqua et al<sup>26</sup> confirmed that the implant of CTR combined with multifocal IOLs reduces the third-order aberration related to potential IOL misalignments and tilting. Future studies should be conducted to evaluate the level of tolerance of this type of IOL to decentrations and tilting in order to confirm the real need for the use of CTR.

Finally, this study has several limitations that must be acknowledged. One of these limitations is the absence of a control group of eyes implanted with monofocal IOLs to perform a comparative analysis allowing the extraction of more consistent conclusions. Future randomized clinical trials must be conducted to compare the outcomes obtained with this new modality of IOL with those obtained with monofocal, EDOF and multifocal IOLs. This would allow determining the real benefits of this CTF IOL over other previously commercially released presbyopia-correcting IOLs. Another important limitation of this investigation is the mode of evaluating the perception of photic phenomena, without using a validated questionnaire for such purpose. Future studies must be performed using validating tools to confirm the preliminary outcomes obtained in the current series. Likewise, there are some aspects that could have been evaluated in the study for a better characterization of the performance of the CTF IOL evaluated, such as the measurement of contrast sensitivity at near, intraocular aberrometry, the level of scattering or the size of the light disturbances perceived. Future trials should consider the evaluation of all these variables.

In conclusion, the CTF IOL Precizon Presbyopic is a presbyopia-correcting implant that provides a complete visual rehabilitation after cataract surgery, maintaining excellent levels of visual quality. Specifically, the IOL generates a continuous range of functional vision from distance to near, with minimal levels of photic phenomena associated. Future studies should be conducted to confirm if these results are maintained in the long term.

#### WHAT WAS KNOWN

- \*Multifocal IOLs are an effective option to provide postoperative spectacle-independence and functional vision

- \*One of the main disadvantages of multifocal IOLs is the induction of disturbing photic phenomena mainly due to the significant difference between in-focus and out-focus images projected on the retina

- \*Extended depth of focus IOLs were developed to overcome the photic phenomena problems associated to multifocal IOLs by inducing a continuous range of focus, but with some limitations in near vision performance

- \*Some multifocal IOL designs are pupil-dependent, with a significant variability in the outcomes depending on pupillary changes

#### WHAT THIS PAPER ADDS

- \*The concept of continuous transitional focus (CTF) IOL is an option of implant in cataract surgery that provides a complete visual rehabilitation after cataract surgery, maintaining excellent levels of visual quality.

- \*CTF IOLs generate a continuous range of functional vision from distance to near.

- \*CTF IOLs are associated to minimal levels of photic phenomena.

\*Future studies should be conducted to compare CTF IOLs with multifocal and EDOF IOLs in order to confirm if this type of IOL overcomes the limitations associated to the other two types of presbyopia correcting IOLs.

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## Figure legends

Figure 1.- Diagram of the optical design of the 570 A0 Precizon Presbyopic intraocular lens.

Figure 2.- Postoperative distribution of monocular uncorrected distance (UDVA), intermediate (UIVA), and near visual acuity (UNVA) 1 month after the implantation of the 570 A0 Precizon Presbyopic intraocular lens in the sample evaluated. The same distribution was observed at 6 months after surgery.

Figure 3.- Postoperative distribution of binocular uncorrected distance (UDVA), intermediate (UIVA), and near visual acuity (UNVA) after the implantation of the 570 A0 Precizon Presbyopic intraocular lens in the sample evaluated.

Figure 4.- Mean 1-month and 6-month postoperative binocular defocus curve after the implantation of the 570 A0 Precizon Presbyopic intraocular lens in the sample evaluated.

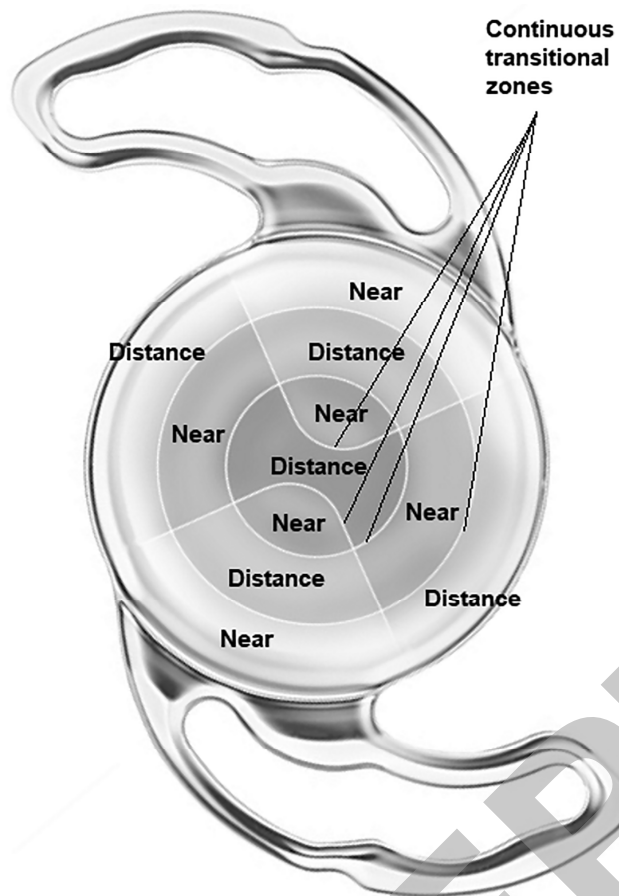
Figure 5.- Mean 1-month and 6-month postoperative binocular contrast sensitivity function after the implantation of the 570 A0 Precizon Presbyopic intraocular lens in the sample evaluated.

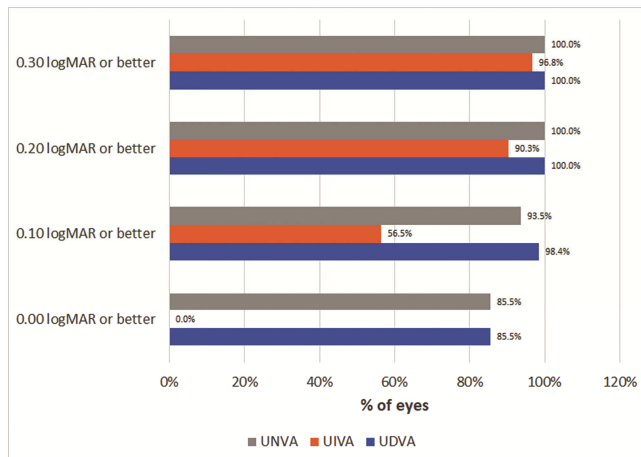
## Tables

Table 1.- Summary of preoperative and postoperative visual and refractive data in the sample evaluated. The corresponding p-values for the comparison between visits are shown for each parameter evaluated.

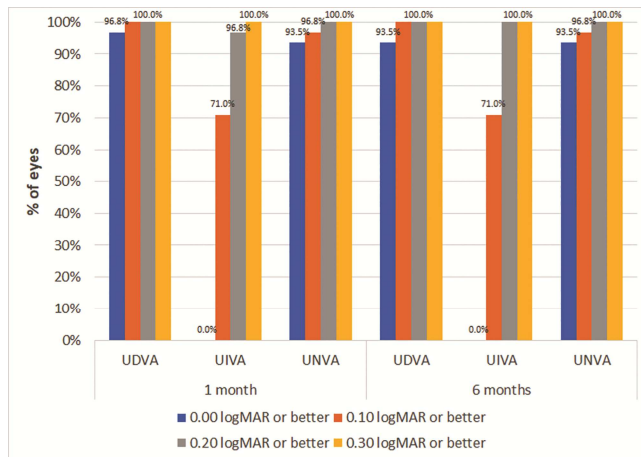
Mean (SD) Median (Range)	Preoperative	1 month postoperative	6 months postoperative	P-value
<b>Monocular LogMAR UDVA</b>	0.75 (0.35) 1.00 (0.10 to 1.30)	0.03 (0.04) 0.05 (0.00 to 0.15)	0.03 (0.04) 0.04 (0.00 to 0.15)	<0.001 (preop-1 month) 0.999 (1-3 months)
<b>Binocular LogMAR UDVA</b>	---	0.01 (0.02) 0.00 (0.00 to 0.10)	0.01 (0.03) 0.00 (0.00 to 0.10)	0.317 (1-3 months)
<b>Monocular LogMAR UNVA</b>	0.76 (0.32) 0.85 (0.00 to 1.30)	0.04 (0.06) 0.05 (0.00 to 0.22)	0.04 (0.05) 0.05 (0.00 to 0.22)	<0.001 (preop-1 month) 0.157 (1-3 months)
<b>Binocular LogMAR UNVA</b>	---	0.02 (0.04) 0.00 (0.00 to 0.15)	0.02 (0.04) 0.00 (0.00 to 0.15)	0.999 (1-3 months)
<b>Monocular LogMAR UIVA</b>	---	0.19 (0.06) 0.15 (0.10 to 0.40)	0.19 (0.06) 0.15 (0.10 to 0.40)	0.999 (1-3 months)
<b>Binocular LogMAR UIVA</b>	---	0.17 (0.05) 0.15 (0.10 to 0.30)	0.17 (0.04) 0.15 (0.10 to 0.22)	0.317 (1-3 months)
<b>Binocular LogMAR CDVA</b>	0.10 (0.13) 0.05 (0.00 to 0.52)	0.01 (0.02) 0.00 (0.00 to 0.10)	0.01 (0.02) 0.00 (0.00 to 0.10)	<0.001 (preop-1 month) 0.999 (1-3 months)
<b>SE (D)</b>	---	-0.55 (0.50) -0.50 (-1.50 to 0.50)	-0.54 (0.52) -0.50 (-1.50 to 0.50)	0.180 (1-3 months)
<i>Only preoperative data</i>				
<b>AL (mm)</b>	23.47 (1.12) 23.23 (21.96 to 26.32)			
<b>ACD (mm)</b>	2.59 (0.34) 2.61 (1.76 to 3.23)			
<b>Mean keratometry (mm)</b>	7.71 (0.23) 7.71 (7.16 to 8.54)			
<b>WTW (mm)</b>	11.98 (0.39) 12.00 (10.90 to 12.70)			
<b>IOL power (D)</b>	20.48 (3.46) 21.25 (11.50 to 25.00)			

\*Abbreviations: SD, standard deviation; D, diopters; UDVA, uncorrected distance visual acuity; CDVA, corrected distance visual acuity; UIVA, uncorrected intermediate visual acuity; UNVA, uncorrected near visual acuity; CNVA, corrected near visual acuity; SE, spherical equivalent; AL, axial length; ACD, anterior chamber depth; WTW, white-to-white corneal diameter; IOL, intraocular lens.

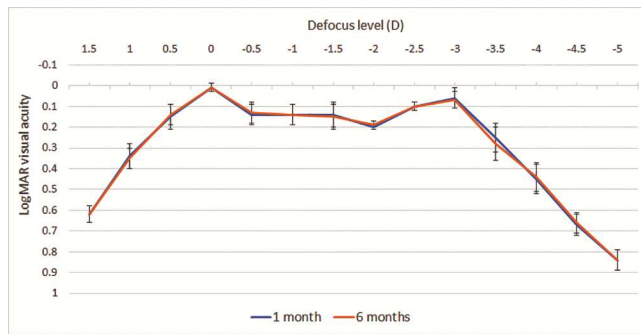




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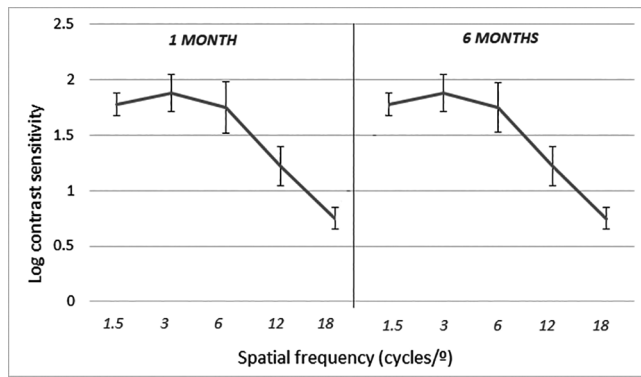


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